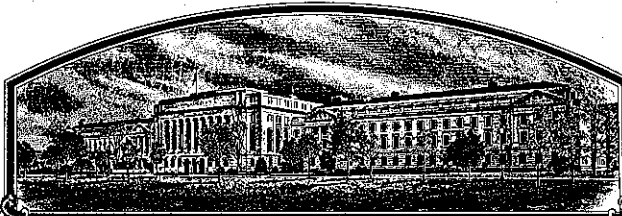


No.

9400163



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

*Northrup King Company*

Whereas, THERE HAS BEEN PRESENTED TO THE

**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'552-25'



*In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of October in the year of our Lord one thousand nine hundred and ninety-five.*

Attest:

*Margaret A. Starnes*

Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*W. L. G. Plitman*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) <b>Northrup King Company</b>		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. <b>X9350, Y880414</b>	3. VARIETY NAME <b>S52-25</b>
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) <b>P.O. Box 949 Washington, Iowa 52353-0949 Attention: Dr. John C. Thorne</b>		5. PHONE (Include area code) <b>319-653-2181</b>	<b>FOR OFFICIAL USE ONLY</b> PVPO NUMBER <b>9400163</b> Filing and Examination Fee. <b>\$2,325.00</b> Date <b>April 25, 1994</b> Certificate Fee. <b>\$300.00</b> Date <b>Aug 4, 1995</b>
6. GENUS AND SPECIES NAME <b>Glycine max</b>	7. FAMILY NAME (Botanical) <b>Leguminosae</b>		
8. CROP KIND NAME (Common Name) <b>Soybean</b>	9. DATE OF DETERMINATION <b>September, 1991</b>		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) <b>Corporation</b>			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION <b>Delaware</b>		12. DATE OF INCORPORATION <b>1976</b>	

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

**Dr. John C. Thorne  
Northrup King Co.  
P.O. Box 949  
Washington, Iowa 52353-0949**

PHONE (Include area code): **319/653-6645**

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

- a. ☒ Exhibit A, Origin and Breeding History of the Variety  
b. ☒ Exhibit B, Novelty Statement  
c. ☒ Exhibit C, Objective Description of Variety  
d. ☐ Exhibit D, Additional Description of Variety  
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership  
f. ☒ Seed Sample (2,500 viable untreated seeds) Date Seed Sample mailed to Plant Variety Protection Office \_\_\_\_\_  
g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States"

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(u) of the Plant Variety Protection Act.)

☐ YES (If "YES," answer items 16 and 17 below) ☒ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☐ YES ☒ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act Give date \_\_\_\_\_)  
☒ NO


19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?

☐ YES (If "YES," give names of countries and dates)  
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT (Owner(s)) 	CAPACITY OR TITLE <b>Soybean Research Dir.</b>	DATE <b>April 11, 1994</b>
SIGNATURE OF APPLICANT (Owner(s))	CAPACITY OR TITLE	DATE

## EXHIBIT A

## Origin and Breeding History of S52-25

In 1984 the Coker breeding group at West Memphis, AR made the cross 'P 5482' x 'A 5474', and the following year the F1 was grown in the field at Bay, AR. During the winter of 1985-86 the F2 was advanced to F4 in the greenhouse at Hartsville, SC, utilizing a modified single seed descent (SSD) procedure. The F4 generation was planted in the field at Bay during the summer of 1986 and numerous single plants were selected at harvest. These were then screened with race 3 of soybean cyst nematode (Heterodera glycines) during the winter of 1986-87, and resistant plants were grown as F5 progeny rows at Perryville, MO during the summer of 1987. One row, #2657 was selected, harvested in bulk and designated Y880414. From 1988-91, Y880414 was tested in yield trials throughout the mid-south and the southeastern United States. During this period, the line was characterized as possessing white flowers, tawny pubescence, brown pod walls and seed with a shiny seed coat luster and a hilum with black pigmentation. It was further established that Y880414 was resistant to race 1 of Phytophthora magasperma and further screenings with races 3, 4 and 7 of the pathogen, utilizing the same hypocotyl inoculation technique, have confirmed that Y880414 is carrying the RPS 1-c gene for resistance. Y880414 was further evaluated from 1992-93 in advanced trials, across a wide range of environments, under the experimental designation X9350, and based on its yield superiority and disease resistance, it was released in 1994 as S52-25.

Breeder's seed was generated in 1992 by bulking together seed from similar plant row progenies. Foundation seed was produced and approved by the Missouri Seed Improvement Association in 1993. Varietal purity will be maintained through routine roguing or by the further use of progeny rows as required.

S52-25 is a uniform, stable variety except that it may contain plants with purple flowers at a frequency not exceeding 1/8,000. During the six years of testing and four years of seed increase, we have observed no other off-types except for minor environmentally induced variation in the intensity of hilum pigmentation.

## EXHIBIT B

## Novelty Statement for the Variety S52-25

Soybean variety S52-25 is most like the varieties Coker 425 and A5474. It can be differentiated from Coker 425 on the basis of flower and pod wall color. S52-25 has white flowers and a brown pod wall, whereas Coker 425 has purple flowers and tan pod walls. It can be differentiated from A5474 on the basis of soybean cyst nematode. S52-24 is resistant to race 3 and susceptible to race 14, whereas A5474 is resistant to both races 3 and 14 (formerly referred to as race 4).

U.S. DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL MARKETING SERVICE  
 LIVESTOCK, MEAT, GRAIN & SEED DIVISION  
 PLANT VARIETY PROTECTION OFFICE  
 BELTSVILLE, MARYLAND 20705

EXHIBIT C  
 (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY  
 SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Northrup King Company	TEMPORARY DESIGNATION X9350, Y880414	VARIETY NAME S52-25
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) P.O. Box 949 Washington, Iowa 52353-0949 Attn: John Thorne		FOR OFFICIAL USE ONLY PVPO NUMBER 9400163

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., ).

## 1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios =  $\leq 1.2$ )  
 3 = Elongate (L/T ratio  $> 1.2$ ; T/W =  $\leq 1.2$ )

2 = Spherical Flattened (L/W ratio  $> 1.2$ ; L/T ratio =  $\leq 1.2$ )  
 4 = Elongate Flattened (L/T ratio  $> 1.2$ ; T/W  $> 1.2$ )

## 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) \_\_\_\_\_

## 3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')

2 = Shiny ('Nebsoy'; 'Gasoy 17')

## 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

## 5. HILUM COLOR: (Mature Seed)

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) \_\_\_\_\_

## 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow

2 = Green

## 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low

2 = High

## 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1<sup>a</sup>)2 = Type B (SP1<sup>b</sup>)

## 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

## 10. LEAFLET SHAPE:

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) \_\_\_\_\_

4

## 11. LEAFLET SIZE:

☒ 21 = Small ('Amsoy 71'; 'A5312')  
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

## 12. LEAF COLOR:

☒ 21 = Light Green ('Weber'; 'York')  
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

## 13. FLOWER COLOR:

☐ 1

1 = White

2 = Purple

3 = White with purple throat

## 14. POD COLOR:

☒ 2

1 = Tan

2 = Brown

3 = Black

## 15. PLANT PUBESCENCE COLOR:

☒ 2

1 = Gray

2 = Brown (Tawny)

## 16. PLANT TYPES:

☐ 11 = Slender ('Essex'; 'Amsoy 71')  
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

## 17. PLANT HABIT:

☐ 1

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

## 18. MATURITY GROUP:

☐ 0 ☒ 8

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

## 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

## BACTERIAL DISEASES:

☒ 2Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)☐Bacterial Blight (*Pseudomonas glycinea*)☒ 2Wildfire (*Pseudomonas tabaci*)

## FUNGAL DISEASES:

☐ 1Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)☐

Race 1

☐

Race 2

☐

Race 3

☐

Race 4

☐

Race 5

☒ 1

Other (Specify)

Susceptible to common  
isolates (Arkansas)  
race unspecified☐Target Spot (*Corynespora cassicola*)☐Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐Powdery Mildew (*Microsphaera diffusa*)☐Brown Stem Rot (*Cephalosporium gregatum*)☒ 2Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

## 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

## FUNGAL DISEASES: (Continued)

☒ 1 Pod and Stem Blight (*Diaporthe phaseolorum* var; *sojae*)  
☐ Purple Seed Stain (*Cercospora kikuchii*)  
☐ Rhizoctonia Root Rot (*Rhizoctonia solani*)  
 Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)  
☒ 2 Race 1    ☒ 2 Race 2    ☒ 2 Race 3    ☒ 1 Race 4    ☐ Race 5    ☐ Race 6    ☒ 2 Race 7  
☐ Race 8    ☐ Race 9    ☐ Other (Specify) \_\_\_\_\_

## VIRAL DISEASES:

☐ Bud Blight (Tobacco Ringspot Virus)  
☐ Yellow Mosaic (Bean Yellow Mosaic Virus)  
☐ Cowpea Mosaic (Cowpea Chlorotic Virus)  
☐ Pod Mottle (Bean Pod Mottle Virus)  
☐ Seed Mottle (Soybean Mosaic Virus)

## NEMATODE DISEASES:

Soybean Cyst Nematode (*Heterodera glycines*)  
☒ 1 Race 1    ☐ Race 2    ☒ 2 Race 3    ☒ 1 Race 4    ☒ 14 Other (Specify) Susceptible  
☐ Lance Nematode (*Hoplaimus Colomus*)  
☒ 1 Southern Root Knot Nematode (*Meloidogyne incognita*)  
☐ Northern Root Knot Nematode (*Meloidogyne Hapla*)  
☒ 1 Peanut Root Knot Nematode (*Meloidogyne arenaria*)  
☐ Reniform Nematode (*Rotylenchulus reniformis*)  
☐ OTHER DISEASE NOT ON FORM (Specify): \_\_\_\_\_

## 20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☒ 1 Iron Chlorosis on Calcareous Soil  
☐ Other (Specify) \_\_\_\_\_

## 21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☐ Mexican Bean Beetle (*Epilachna varivestis*)  
☐ Potato Leaf Hopper (*Empoasca fabae*)  
☐ Other (Specify) \_\_\_\_\_

## 22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	A5474	Seed Coat Luster	S59-60
Leaf Shape	P5482	Seed Size	6955
Leaf Color	A5474	Seed Shape	Coker 425
Leaf Size	A5474	Seedling Pigmentation	6955

## 23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
S52-25 Submitted	140	1.5	69	6.7	11.6	36.3	18.4	13.0	2-4
Coker 425 Name of Similar Variety	141	1.2	61	5.3	10.6	34.5	19.5	12.0	2-4

## PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A<sub>2</sub> in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.



## EXHIBIT E

## Statement of the Basis of Ownership of S52-25

Soybean variety S52-25 was developed by the soybean breeding staff of Coker's Pedigreed Seed Company, which was purchased by Northrup King Co. in July 1988. The germplasm used in the development of S52-25 is cited in Exhibit A of this application.

Northrup King Co. believes that the variety is novel, as defined by the Plant Variety Protection Act; and therefore, that Northrup King Co. is the sole owner of the variety.

JUL 11 1988

8